

Unique ID	First Name	Last Name	Session Type	Session Title	Abstract Title
2669	Yohannes	Abraham	Poster Abstracts	Physics Education Research	Exploring Student Conceptual Resources About Heat and Temperature
2686	Akira	Adachi	Poster Abstracts	Physics Education Research	Experiment of Model Train using Ultrasonic Sensor Connected to Smartphone
2633	Amanda	Adams	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Investigating Student Decision-Making when Engaging in Data Cleaning
3140	Wendy	Adams	Invited Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	The Latest and Greatest from Get the Facts Out
2609	Micol	Alemani	Contributed Abstracts	PER: Assessment, Grading and Feedback	Students' views of experimental physics in German laboratory classes
2382	Emily	Alicea-Munoz	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Remote GTA Preparation: the Good, the Bad, and the Ugly
2854	Emily	Allen	Contributed Abstracts	Using Educational Technology to enhance Diversity, Equity, and Inclusion	Use of physics simulations in supporting equity and student learning
2855	Emily	Allen	Poster Abstracts	Physics Education Research	Use of physics simulations in supporting equity and student learning
3147	Debbie	Andres	Invited Abstracts	Doing Physics and Being	Doing Physics and Being Unsure of How to Introduce Myself
2774	Katherine	Ansell	Invited Abstracts	Emergent Technologies for Remote Instruction	Working together, apart, with IOLabs in remote introductory physics laboratories
3005	Tetyana	Antimirova	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Teaching During COVID: What to Keep Beyond the Pandemic
2494	Enrique	Arce-Larreta	Contributed Abstracts	Integrating Computation into High School Physics	Integrating Computational Jupyter Notebook Lessons into High School Physics
2658	Enrique	Arce-Larreta	Poster Abstracts	Integrating Computation During a Pandemic	Integrating Computational Jupyter Notebook Lessons into High School Physics
2662	Benjamin	Archibeque	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Identifying Shifts in Agency In the STEP UP Ambassador Program
2894	Bijaya	Aryal	Contributed Abstracts	Introductory Courses	Impact of Remote Instruction Modality on a Two-staged Instructional Approach
2437	Timothy	Atherton	Invited Abstracts	LGBT Physicists: Research and Perspectives	LGBT+ Physicists: Harassment, Persistence, and Uneven Support Systems
2875	Pamela	Aycock	Invited Abstracts	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Submitting a manuscript to The Physics Teacher
2780	Mehdi	Avouz	Contributed Abstracts	Computation in Quantum Mechanics	Teaching quantum mechanics in an experiential learning and engaging environment
3144	Roger	Azevedo	Invited Abstracts	Examining student-side interactions with technology	Science of learning with technology using multimodal self-regulated learning data
3040	Janelle	Bailey	Poster Abstracts	Astronomy Poster	Comparing Two Scaffolds for Evaluating Scientific Explanations
2497	D.	Baker	Contributed Abstracts	Introductory Courses	Developing critical thinking questions for introductory physics courses
2892	Lei	Bao	Invited Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Development of a Modeling Framework for Assessment of Scientific Reasoning
2791	Ana	Barrera	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Reflective Journaling in the Era of COVID
2456	Ramon	Barthelemy	Invited Abstracts	Physics experiences of students from underrepresented groups	LGBT+ Physicist: Rethinking Methodology and Building Situated Knowledge
2432	John	Baumgardner	Invited Abstracts	Pandemics, Wars, Catastrophes: Their Impact in the History of Physics	Mass Extinction Caused by Gravitational Instability inside the Earth
2766	Amin	Bayat Barooni	Contributed Abstracts	PER: Curriculum and Instruction	Diverse strategies for design physics activity by investigating research-based activities
2805	Amin	Bayat Barooni	Poster Abstracts	Labs/Apparatus	Diverse strategies for design physics activity by investigating research-based activities
2619	Sebastian	Becker	Contributed Abstracts	PER: Assessment, Grading and Feedback	Gaze data analysis in the interpretation of linear graphs
3024	Ernest	Behringer	Poster Abstracts	Integrating Computation During a Pandemic	Computational Tasks for Intermediate Mechanics
2294	Joanna	Behrman	Invited Abstracts	History of Underrepresented Groups in Physics	Importance of the Islamic Golden Age for Physics and Astronomy
3141	Alexey	Belyanin	Invited Abstracts	Explaining Frontiers & Modern Technology	Information technology: challenges and bottlenecks
3014	Jonathan	Bennett	Contributed Abstracts	Introductory Courses	Using Introductory Physics to Model Motion of Respiratory Aerosol Droplets
2909	Paul	Bergeron	Contributed Abstracts	Introductory Courses	Meaningful Active Learning Environments and the Need for Scientific Practices
2914	Paul	Bergeron	Poster Abstracts	Physics Education Research	Student Engagement in the Practice of Developing and Using Models
2772	Calvin	Berggren	Contributed Abstracts	Introductory Courses	Solving Kinematics Problems Using Kinematic Graphs
2834	Edward F	Berliner	Contributed Abstracts	High School	Pushing The Limit: Students Rising To The Challenge
3027	Nancy	Beverly	Poster Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Health/life Scenario Digital Worksheets with Student Choice of Details
2947	Matthew	Blackman	Invited Abstracts	"Ooh I want to try that!" Best new labs we've seen	Gamify, don't simplify: Virtual activities for student intuition & motivation
2451	Gerald	Blazey	Invited Abstracts	Science Advocacy and Communicating with Elected Officials	Perspectives from Inside and Outside: Advocating for Science and Policy
2501	Jennifer	Blue	Poster Abstracts	Labs/Apparatus	Teaching Physics by Inquiry Remotely
2424	Peter	Bohacek	Contributed Abstracts	Introductory Labs/Apparatus	Integrating Bluetooth Sensors into a Web-based Lab Notebook (Pivot Interactives)
3066	Scott	Bonham	Contributed Abstracts	History of Underrepresented Groups in Physics	The Uncelebrated Arab Genius
2457	James	Borgardt	Invited Abstracts	The Effective Practices for Physics Programs (EP3) Guide and Departmental Action Leadership Institutes (DALI)	Toolkit for Departments Under Threat
2648	Victoria	Borish	Contributed Abstracts	PER: Diverse Investigations	Student Engagement with Modeling in Multiweek Open-Ended Lab Projects
2442	Darius	Bost	Invited Abstracts	LGBT Physicists: Research and Perspectives	From LBGT to Queer: Physicists Without Identities
3096	Theodore	Bott	Contributed Abstracts	Integrating Computation into High School Physics	Developing and Applying a Computational Thinking Framework in Introductory Physics
3051	Andrew	Boudreaux	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	A dual process based teaching intervention for terminal speed*
3062	Andrew	Boudreaux	Contributed Abstracts	Teaching online/remote physics classes	Implementing and assessing guided-inquiry labs in an online format
3002	Forrest	Bradbury	Contributed Abstracts	PER: Curriculum and Instruction	Assessing a flipped-lab course consisting of open-inquiry projects using Arduinos
3055	Suzanne	Brahmia	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	The mixed messaging of algebraic variables in physics
3131	Jared	Breakall	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	Factor analysis of the PTA.P.HE
2682	Eric	Brewer	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Transitions to online physics teaching: Empathy and above average quality
2877	Bill	Bridges	Contributed Abstracts	Ethics and Teaching in the Digital Age	Investigating How Scientists Engage in Ethical Discussions
3075	David	Brookes	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Sense-making by manipulating apparatus and using gesture
2291	Eric	Bubar	Contributed Abstracts	Effective Practices in Educational Technology	Creating Virtual Reality STEM Escape Rooms
2350	Danielle	Bugge	Contributed Abstracts	High School	Facilitating Authentic ISLE Instruction in a Virtual Environment
2870	Jan-Philipp	Burde	Poster Abstracts	Technologies	An Analogy-Based 3D-Simulation for Teaching Simple Electric Circuits
2949	John	Burk	Contributed Abstracts	Effective Practices in Educational Technology	Computational Modeling & Video Analysis in One Easy Environment
2551	Daniel	Burns	Contributed Abstracts	Integrating Computation into High School Physics	Modeling and Measuring Characteristics of a Large Amplitude Physical Pendulum
2218	Marcos	Caballero	Invited Abstracts	The Art and Science of Teaching	Teaching a Computationally Integrated Quantum Physics Course Online
2980	Jared	Canright	Invited Abstracts	Emergent Technologies for Remote Instruction	Virtual Reality Enabling Remote Collaborative Physics Labs
3169	Cerena	Cantrell	Invited Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Decolonizing the Physics and Astronomy Classroom
2845	Ying	Cao	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Shared-Resources in Student Problem-Solving of Spherical Unit Vectors: Theory, Methodology
2427	Duncan	Carlsmith	Contributed Abstracts	Introductory Labs/Apparatus	Computational optics in first year university physics
2688	Dylan	Cawman	Contributed Abstracts	Ethics and Teaching in the Digital Age	The Student Experience - How to Enrich STEM Education
2487	Ruth	Chabay	Invited Abstracts	Integrating Computation During a Pandemic	Integrating computation in a remote introductory course
2806	Deepa	Chari	Invited Abstracts	Graduate Student Education in PER	Viyvan Vidushi- A programmatic effort towards addressing under-representation
2952	Zhongzhou	Chen	Contributed Abstracts	Examining student-side interactions with technology	A data driven study of students' completion of online homework
2850	Jaquelyn	Chini	Contributed Abstracts	PER: Diversity, Equity & Inclusion	The Universal Design for Learning Instructional Practices Observation Protocol (UDL-IPOP)
2565	H.S.	CHOI	Poster Abstracts	Labs/Apparatus	Experiment activity of Student collaboration In Synchronous Distance Learning

2950	Cory	Christenson	Contributed Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Standards-Based Grading Without Exams For Online Instruction
2977	Devon	Christman	Contributed Abstracts	Current topics in physics for all ages	Superposition With Sporks: 3rd Graders' Analogical Models of Quantum Superposition
3029	Ximena	Cid	Invited Abstracts	Doing Physics and Being	Doing Physics and Being Chicana and Indigena
3095	Eleanor	Close	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Strength-based analysis of experiences of physics students with ADHD
2938	Kimberly	Coble	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Cultural Capitals Expressed through Reflective Journaling in Introductory Physics Labs
2900	Ian	Coburn	Poster Abstracts	SPS Undergraduate Poster Session	Physics Education Research as Preparation For a Future Physics Educator
2956	Camile	Coffie	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Experts' Perspectives on Disability in Postsecondary STEM Across Disciplines
2990	Kelley	Commeford	Contributed Abstracts	PER: Curriculum and Instruction	Characterizing Active Learning Environments in Physics using Latent Profile Analysis
2650	Joel	Corbo	Invited Abstracts	The Effective Practices for Physics Programs (EP3) Guide and Departmental Action Leadership Institutes (DALI)	Supporting departmental change efforts with Departmental Action Leadership Institutes (DALIs)
2441	Theodore	Corcovilos	Contributed Abstracts	Upper Division Undergraduate	The Equations Match the Drawings: Geometric Algebra for Geometric Optics
3026	Edgar	Corpuz	Contributed Abstracts	Teaching online/remote physics classes	Implementation of modified team-based learning approach in online physics courses
2640	Giaco	Corsiglia	Contributed Abstracts	Upper Division Undergraduate	Online Tutorials for Middle-Division Quantum with Adaptive Guidance
2474	Giaco	Corsiglia	Poster Abstracts	Upper Division and Graduate	Online Tutorials for Middle-Division Quantum with Adaptive Guidance
2359	Joe	Cossette	Invited Abstracts	"Ooh I want to try that!" Best new labs we've seen	Group-Worthy Physics Challenges
2431	Charles	Couch	Contributed Abstracts	21st Century Physics in the Classroom	Fun before physics
2936	Erika	Cowan	Contributed Abstracts	Other Paper	Using Deliberate Innovation to Understand Indifference in Graduate Advisor/Advisee Relationships
2934	Erika	Cowan	Poster Abstracts	Physics Education Research	Using Deliberate Innovation to Understand Indifference in Graduate Advisor/Advisee Relationships
2645	Stewart	Crawford	Contributed Abstracts	Other Paper	Connecting Simulations to The World
2857	Cass	Croft	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Using Deliberate Democracy to Develop Scientific Skills through Group Collaboration
2423	Nate	Crossette	Contributed Abstracts	Upper Division/Graduate Courses	Comparing undergraduate and graduate student reasoning on conceptual entropy questionnaire
2703	Nate	Crossette	Poster Abstracts	Physics Education Research	Network analysis of collaboration in upper-division remote and hybrid courses
2702	Nate	Crossette	Poster Abstracts	Upper Division and Graduate	Comparing undergraduate and graduate student reasoning on conceptual entropy questionnaire
2450	Chris	Culbert	Invited Abstracts	Back to the Moon, and off to Mars	Using Commercial services to get to the Moon
2951	Karen	Cummings	Contributed Abstracts	PER: Assessment, Grading and Feedback	Motivating Student Engagement in Remote Groupwork
2460	Beth	Cunningham	Invited Abstracts	Physics & Astronomy SEA Change Efforts	Physics & Astronomy SEA Change Overview and History
2399	Sonja	Cwik	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Physics self-efficacy of male and female students controlling for grade
2400	Sonja	Cwik	Poster Abstracts	Physics Education Research	How the learning environment predicts students' motivational beliefs in physics
2371	Rob	Dalka	Invited Abstracts	The Effective Practices for Physics Programs (EP3) Guide and Departmental Action Leadership Institutes (DALI)	Department chairs report misalignment between their current and ideal departments
3071	Nityananda	Das	Poster Abstracts	Physics Education Research	Optimum separation of two plates for maximum potential difference
2358	Allison	Daubert	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Recruiting Undergraduate Pre-Service Teachers with a Physics Teaching Methods Course
2991	Erin	De Pree	Contributed Abstracts	Implementing the TEAM-UP Report	Handling Student Resistance When Teaching About Racial Microaggressions
2334	James	De Winter	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Shoebox PCK: Remote physics teacher education with/on a shoestring.
2632	Vera	Degtiareva	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Analysis of LA- and TA-facilitated group work in studio classrooms
2782	Sarah	Demers	Contributed Abstracts	Explaining Frontiers & Modern Technology	Relativity to Muons with Physics and Dance
2974	Paul	DeStefano	Poster Abstracts	Physics Education Research	Students' Self-Efficacy in an Accelerated Remote Introductory Lab Sequence
2297	Sanjay	Dev	Contributed Abstracts	Informal Science in a Virtual World	Mad - Not so mad scientist
2822	Sophia	Domokos	Contributed Abstracts	Explaining Frontiers & Modern Technology	Using the Language of Quantum Mechanics to Explain Holographic Duality
2812	Eugenii	Donev	Poster Abstracts	Labs/Apparatus	Surface-Plasmon-Resonance Sensing in the Advanced Physics Laboratory
2701	Constance	Doty	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	GTAs' Use of Pedagogical Skills in Remote Mixed-reality Training Session
2354	Danny	Doucette	Contributed Abstracts	PER: Diverse Investigations	Roles in Collaborative Introductory Lab Activities
2960	Andrew	Duffy	Contributed Abstracts	Effective Practices in Educational Technology	Interactive Google doc worksheets for introductory physics
2736	Timothy	Duman	Contributed Abstracts	Teaching online/remote physics classes	Using standards based grading in an online physics course
2430	Melissa	Eblen Zavas	Contributed Abstracts	Using Educational Technology to enhance Diversity, Equity, and Inclusion	Educational technology to support DEI at course and institutional levels
2518	Gabriel	Ehrlich	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Resolving Inconsistencies in E&M by Seeking Coherence Between Physical/Mathematical Reasoning
2719	Livvy	Eickerman	Invited Abstracts	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	The Elephant in the (Class)Room: Discussing Gender Inequality in Physics
2705	Shams	El-Adawy	Poster Abstracts	Physics Education Research	Growth of Emerging Education Researchers in Virtual Professional Development Program
2930	Yasmene	Eihady	Contributed Abstracts	Using Educational Technology to enhance Diversity, Equity, and Inclusion	Facilitating Online Learning Communities in Large-Enrollment Introductory Physics Courses
2916	Cory	Ellis	Poster Abstracts	Physics Education Research	Students' conceptions and ideas about "motion" during think-aloud problem-solving activities.
2697	Paul	Emigh	Contributed Abstracts	Introductory Courses	Teaching Electric Field before Coulomb's Law
2760	Tatiana	Erukhimova	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Impact of Informal Physics Programs on Female Students
2933	Zak	Espley	Contributed Abstracts	Introducing Remote Experiments to Students	Remotification of Five Introductory Modern Physics labs for ~\$1k apiece
2417	Charles	Esty	Invited Abstracts	Back to the Moon, and off to Mars	NASA's Artemis Program
2734	Alex	Evans	Invited Abstracts	Virtual Outreach to Underrepresented Groups	STEM Through the Screen: Experiences of adapting community outreach
2689	Zachary	Felker	Contributed Abstracts	PER: Curriculum and Instruction	Impact of Extra Credit on Students' Cramping Behavior
2483	Brett	Fiedler	Contributed Abstracts	Effective Practices in Educational Technology	Beyond the visual: Multimodal design of physics interactive simulations
2352	Christopher	Fischer	Contributed Abstracts	PER: Curriculum and Instruction	The interdependence of physics self-efficacy and calculus transfer ability
2820	Thomas	Fitts	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Supporting Students in Exploring Alternative Lines of Reasoning
3143	Douglas	Forrest	Invited Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Fifteen months of making physics relevant during a pandemic
2904	Claudia	Fracchiolla	Contributed Abstracts	Effective Practices in Educational Technology	A Collaborative Approach to Designing an Introductory Computational Science Course
2907	Claudia	Fracchiolla	Contributed Abstracts	PER: Diverse Investigations	Structures that support university students' identities: An informal physics case
2715	Maxwell	Franklin	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Investigating the Relationship Between Motivation and Retention in Women Undergraduates
3079	Ronald	Freeman	Contributed Abstracts	Physics Majors: High School to Doctorate	Instructional Context for Astrophysics: Space Weather
2559	Jim	Freericks	Contributed Abstracts	Upper Division Undergraduate	Bringing the physics back into the undergraduate quantum classroom
2394	Merideth	Frey	Poster Abstracts	Lecture/Classroom	Exploring Ways to Make a Remote Physics Classroom More Inclusive
2666	Jon	Gaffney	Contributed Abstracts	Lecture/Classroom	Designing a Physics Course Sequence for Construction Management Majors
2814	Joseph	Gallagher	Contributed Abstracts	Teaching online/remote physics classes	The Effectiveness of Online Education for Introductory Astronomy
2687	Justin	Gambrell	Contributed Abstracts	PER: Assessment, Grading and Feedback	Computational Assessment in Introductory Physics: Codes From Qualitative Interview Analysis
2540	Padma	Ganesh	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Stop Saying "Zero Gravity"?
2747	Tyler	GARCIA	Contributed Abstracts	Ethics and Teaching in the Digital Age	Roles of goals and values in ethical discussions
3021	Margery (Meg)	Gardner	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Developing post-emergency field work practices from lessons learned during 2020
2881	Andrew	Gavrin	Contributed Abstracts	Effective Practices in Educational Technology	Updating mechanics labs with technology for the pandemic and beyond
2888	Daniel	Gebreselasie	Contributed Abstracts	Teaching online/remote physics classes	Simulation lab with mathematica
2630	Jim	Gell	Invited Abstracts	Integrating Computation into High School Physics	Computational Science with 9th Grade Physics Students

2999	James	Gerald	Contributed Abstracts	Effective Practices in Educational Technology	Is it time to abandon the calculator?
2447	Katherine	Gifford	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Seeking coherence and switching reasoning after forgetting an equation
2910	Mayuri	Gihooly	Poster Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Implementation of a biomedically relevant active-learning Physics curriculum
2547	Logan	Gin	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Challenges with Online Course Delivery for STEM Undergraduates with Disabilities
3085	Elizabeth	Gire	Contributed Abstracts	Upper Division Undergraduate	Using Completeness Relations to Help Students Understand Wavefunctions
2549	Allison	Gonsalves	Invited Abstracts	Physics experiences of students from underrepresented groups	Networks of support for minoritized students in physics
3090	Andrés	González García	Contributed Abstracts	Current topics in physics for all ages	Fractional Calculus Approach in Supercontinuum Generation in Photonic Crystal Fibers
2555	Wilson	Gonzalez-Espada	Poster Abstracts	Other Poster	STEM Attrition at a Military Academy: Cadets' Experiences and Recommendations
2677	Melanie	Good	Contributed Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Creating honest, fair, and equitable remote introductory physics exams
2749	Lisa	Goodhew	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Preparing Learning Assistants to build on students' fruitful physics ideas
2692	Colin	Green	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Sentiment Analysis of Faculty Responses COVID Transition to Online Learning
2738	Richard	Guarino	Contributed Abstracts	Introductory Labs/Apparatus	Complete measurement of a damped harmonic oscillation with the Smart-Cart
2942	Ayush	Gupta	Contributed Abstracts	PER: Diverse Investigations	Unpacking assumptions in students' reasoning about socio-technical issues
3142	Sathya	Guruswamy	Contributed Abstracts	Upper Division Undergraduate	Reimagining Undergraduate Research in the post Covid-19 era
3025	Brianne	Gutmann	Contributed Abstracts	PER: Curriculum and Instruction	Building Nuance in Classroom Conversations about Ethics, Science, and Society
2611	Kelby	Hahn	Contributed Abstracts	Lecture/Classroom	Using Arms to Represent Complex-Valued Vectors in Quantum Mechanics
2748	Evan	Halstead	Contributed Abstracts	Other Paper	Physics and Society: a course on power, justice, and policy
2925	Paul	Hamerski	Contributed Abstracts	Integrating Computation into High School Physics	Identity and social positioning in computation-integrated physics
2796	Daniel	Hancock	Poster Abstracts	SPS Undergraduate Poster Session	An Analytical Approximation of Gravitational Waves
2671	Brynna	Hansen	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Student Resources for Understanding Momentum
2768	John	Hansen	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Multidimensional Item Response Theory and the BEMA: Modeling Student Thinking
2668	Brynna	Hansen	Poster Abstracts	Physics Education Research	Student Resources for Understanding Momentum
2765	John	Hansen	Poster Abstracts	Physics Education Research	Using Ensemble Machine Learning to Identify At-Risk Physics Students
3038	Doug	Harper	Poster Abstracts	Computer Modeling and Computation in Labs	Integrating Simulation and Experiment in the WKU University Physics Laboratory
2777	Roger	Hart	Poster Abstracts	Astronomy Poster	Activities for Visually Impaired Learners in Introductory Solar System Astronomy
3106	Rachel	Hartley	Contributed Abstracts	Effective Practices in Educational Technology	Lights, camera, action! From IOP physics coach to YouTuber
2519	Christopher	Hass	Poster Abstracts	Physics Education Research	How STEM faculty enter Discipline Based Education Research
2797	Susmita	Hazra	Poster Abstracts	Pre-college/Informal and Outreach	Gender Gap in Physics: An Important Initiation from Cameron University
2629	Thomas	Head	Contributed Abstracts	PER: Diversity, Equity & Inclusion	How Goals Drive Physics Identity
2422	Cortney	Headley	Contributed Abstracts	PER: Curriculum and Instruction	Instructors' Impact on Students' Perceptions of Computation
2700	Erin	Heath	Invited Abstracts	Science Advocacy and Communicating with Elected Officials	Engaging in Policy in the Time of COVID and Beyond
2649	Richard	Hechter	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Video Killed the Radio Star: Flipgrid for online physics pedagogy.
3010	Andrew	Heckler	Contributed Abstracts	PER: Curriculum and Instruction	Learning basic physics skills via regular online mastery practice
2859	Rachel	Henderson	Contributed Abstracts	PER: Diverse Investigations	The Experience Sampling Method: Measuring the Dynamics of Students' Self-Efficacy
2750	Jessica	Hernandez	Contributed Abstracts	PER: Diversity, Equity & Inclusion	From Land Acknowledgments to Action: Engaging with Indigenous History
2637	Paula	Heron	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	When scaffolding doesn't work
3057	Shahzad	Hesaraaki	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Collaborative mechanistic reasoning in a Learning Assistant preparation session
2634	Dona	Hewagallage	Contributed Abstracts	PER: Assessment, Grading and Feedback	What does the Force and Motion Conceptual Evaluation pretest measure?
2636	Dona	Hewagallage	Poster Abstracts	Physics Education Research	What factors predict FMCE post-test scores controlling for pretest scores?
2889	Jack	Higginbotham	Contributed Abstracts	Current topics in physics for all ages	Visualizing the Gravitational Landscape of the Earth-Moon System
2837	Brant	Hinrichs	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Shared Resources in Student Problem-Solving of Spherical Unit Vectors: Example
2865	Brant	Hinrichs	Poster Abstracts	Physics Education Research	Social-positioning correlates with consensus building in two contentious large-group meetings
2608	Maureen	Hintz	Contributed Abstracts	Sharing Best Ideas for Learning Content in Planetaria	Using a planetarium to demonstrate the scope of the Universe
2439	Theodore	Hodapp	Invited Abstracts	The Effective Practices for Physics Programs (EP3) Guide and Departmental Action Leadership Institutes (DALI)	EP3: A Comprehensive, Community-Sourced Guide for Improving Departments
2709	Leonardo	Hsu	Poster Abstracts	Other Poster	STEM MILES: Mentoring Innovative Learning Experiences for Students
2755	Tra	Huynh	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Physics teachers' framings of equity and anti-racism
2589	Bashirah	Ibrahim	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Pedagogical implications of synthesis problem solving
3022	Safana	Ismail	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Developing skills for validity checking of intuitively appealing responses
2781	Markku	Jaaskelainen	Contributed Abstracts	PER: Diverse Investigations	Developing fluency using multiple representations in geometrical optics.
3163	Shirley	Jackson	Invited Abstracts	Science and Public Policy	Physics: The River that Runs Through It All
2968	Pratheesh	Jakkala	Contributed Abstracts	Upper Division Undergraduate	Physics Undergraduate Advanced Labs during Covid-19 Pandemic
2631	Amali Priyanka	Jambuge	Contributed Abstracts	PER: Assessment, Grading and Feedback	Research-based Assessment Feedback for Instructors
2969	Priya	Jamkhedkar	Poster Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Implementation of a Full Year Introductory Physics Sequence Pre-Health Students
2992	Dr.Ved	Jha	Contributed Abstracts	Resources for Teaching Physics from Societies and Organizations	Characterization of optical signal by Extension Ratio & the Fiber-Length
3097	Andrea	Jimenez Dalmaroni	Contributed Abstracts	PER: Assessment, Grading and Feedback	Transforming collaborative exams to enhance student experience during remote teaching
2897	Nekeisha	Johnson	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Implications of module analysis for instruction of one-dimensional vector manipulation
3003	Jennifer	Jones	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Community College Student Research Projects in the Time of COVID
2679	Barbara	Jones	Invited Abstracts	Using Educational Technology to enhance Diversity, Equity, and Inclusion	The APS/IBM Research Internship for Undergraduate Women and Under-represented Minorities
2963	Lynn	Jorgensen	Contributed Abstracts	Gender	Supporting Gender-Equity in the STEM Classroom
2964	Lynn	Jorgensen	Poster Abstracts	Lecture/Classroom	Supporting Gender-Equity in the STEM Classroom
2305	Paul	Justice	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Impact of mathematical rigor on students' understanding of quantum optics
2988	Ahmed	KamilKhenyab	Contributed Abstracts	Effective Practices in Educational Technology	16-Spinor non-linear field realization in Faddeev-Skyrme model
3073	Anna	Karelina	Contributed Abstracts	Introducing Remote Experiments to Students	ISLE-based apparatus and video labs: student's beliefs about experimental physics
2958	Pooja	Kasam	Contributed Abstracts	Technologies	Automation of QA in Diagnostic Modalities at CFH- Initial Experience
2919	Remi	Kauderer	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	Why Physics Professors Should Take Undergrads to an AAPT Meeting!
2552	Christof	Keebaugh	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Student difficulties identifying diagonal operators for degenerate perturbation theory
2553	Christof	Keebaugh	Poster Abstracts	Upper Division and Graduate	Student difficulties with diagonal operators for degenerate perturbation theory
2895	Kristin	Kellar	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Interventions Designed to Help Students Recognize and Overcome Reasoning Inconsistencies
2660	John	Kelly	Poster Abstracts	Physics Education Research	Knowledge statements as a productive intervention to prompt reflective thinking
2405	Hien	Khong	Poster Abstracts	Physics Education Research	Life and career planning of undergraduate students after graduation
2835	Dakota	King	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Symbolic manipulation fluency predicts introductory physics students' mathematical preparedness
2817	Jennifer	Kirkey	Contributed Abstracts	Effective Practices in Educational Technology	Open and Individualized - Mechanics Homework Problems Project Using WeBWorK
2906	Midori	Kitagawa	Contributed Abstracts	Integrating Computation into High School Physics	Introducing Finite State Machine based modeling into high school physics

2941	Mashood	KK	Contributed Abstracts	PER: Diverse Investigations	Unpacking tensions in a pedagogical transition from lectures to modelling
2948	David	Klassen	Contributed Abstracts	Sharing Best Ideas for Learning Content in Planetaria	Planetaria beyond the Introductory Level
2605	Maurice	Klee	Invited Abstracts	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Surface Charges from a Sensing Pixel Perspective
2459	Alexis	Knaub	Invited Abstracts	Physics & Astronomy SEA Change Efforts	Physics and Astronomy SEA Change Pilot Progress
2880	Kathleen	Koenig	Contributed Abstracts	Effective Practices in Educational Technology	Video versus Interactive Video for Impact on Learning
2879	Kathleen	Koenig	Invited Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Comparing In-person and Online Physics Labs for Developing Scientific Reasoning
3049	Carolann	Koleci	Contributed Abstracts	Effective Practices in Educational Technology	Remote vs. In-Person Learning: Perceptions vs. Outcomes in Introductory Physics
2426	Xiangming	Kong	Poster Abstracts	Labs/Apparatus	Demonstrator of low frequency longitudinal standing wave
2470	AMALIA MARIA	KONTOKOSTA	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Teaching Magnetism: the child of Nursery School, by inquiry.
2473	AMALIA MARIA	KONTOKOSTA	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Teaching Magnetism: the child of Nursery School, by inquiry.
2471	George	Kontokostas	Contributed Abstracts	Current topics in physics for all ages	Explaining physical phenomena happening on Earth and in Space.
2976	David	Kordahl	Contributed Abstracts	History of Underrepresented Groups in Physics	Historical Flirtations with the Physics of the Paranormal
3146	Marc	Kossover	Invited Abstracts	Physics on the Road	Keeping the Best Parts: Learning from Online Demos and Activities
2490	Joseph	Kozminski	Poster Abstracts	Physics Education Research	Developing Essential Physics Skills through a Workshop-style Course
2996	Sujata	Krishna	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Training Physics Learning Assistants in DEI
2378	Tatiana	Krivoshchev	Contributed Abstracts	Effective Practices in Educational Technology	Using a Capstone Experience in the Introductory Physics Classes
2380	Tatiana	Krivoshchev	Poster Abstracts	Astronomy Poster	Web-browser Based Projects in the Hybrid Introductory Astronomy Courses
2377	Tatiana	Krivoshchev	Poster Abstracts	Computer Modeling and Computation in Labs	Introducing Computation and Modeling Experience through Brownian Motion Experiment
2379	Tatiana	Krivoshchev	Poster Abstracts	Integrating Computation During a Pandemic	Using Video Analysis to Perform Remote Experiments in Mechanics Laboratories
3155	Michelle	Kuchera	Invited Abstracts	Integrating Computation During a Pandemic	Computational tools and humane instincts: computation in a pandemic
2674	Sai	Kumar	Contributed Abstracts	Integrating Computation into High School Physics	High School Physics Teachers Online Participation in Computational Waves Class
2830	Milind	Kunchur	Contributed Abstracts	Effective Practices in Educational Technology	A remote course on acoustics for non-science majors
2866	Milind	Kunchur	Poster Abstracts	Labs/Apparatus	Some Cool Hands-On Experiments for a Remote Acoustics Lab
2997	Jarrett	Lancaster	Invited Abstracts	Computation in Quantum Mechanics	Integrating Computation into a Spin First Undergraduate Quantum Mechanics Course
2226	W. Brian	Lane	Contributed Abstracts	PER: Curriculum and Instruction	Student Perceptions of Computation after Upper-Level Coursework
2873	W. Brian	Lane	Invited Abstracts	Computation in Quantum Mechanics	Implementation and Assessment of Computation in a Modern Physics Course
2539	Adam	Lark	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Laboratory Strategies in a Hybrid World
2825	Shane	Larson	Contributed Abstracts	21st Century Physics in the Classroom	Understanding exotic gravitational wave orbits with effective potentials
2665	Ira	Lasseni	Contributed Abstracts	Other Paper	Student Ownership of Lab Projects: The role of interpersonal interactions
2815	Alexandra	Lau	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Active learning in intro courses: Study of 18 high-use departments
2562	M. Jeannette	Lawler	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Decision Based Learning in Conceptual Newtonian Mechanics
2899	Anne	Leak	Contributed Abstracts	PER: Diverse Investigations	Preparing students for impactful careers through context-rich physics learning
3041	Ting-Hui	Lee	Contributed Abstracts	Effective Practices in Educational Technology	Engaging Students with Escape Room Activities
2454	MacKenzie	Lenz	Invited Abstracts	Graduate Student Education in PER	Graduate Reform in Physics and Astronomy: Tragedy, Policy, and Culture
2983	Alessio	Leonardi	Contributed Abstracts	High School	SEEING REALITY THROUGH EINSTEIN'S EYES: A PROPOSAL FOR SPECIAL RELATIVITY
2664	Benjamin	Levy	Contributed Abstracts	Introducing Remote Experiments to Students	Less is More: At-Home Interferometry in Undergraduate Laboratory Course
2435	Heather	Lewandowski	Invited Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Impact of the transition to remote labs due to COVID-19
2813	Jennifer	Lewis	Invited Abstracts	Learning from Other Disciplines	Due respect: Using existing standards for instrument development
2844	Clinton	Lewis	Poster Abstracts	Computer Modeling and Computation in Labs	Radius of Earth from a photo of two distant bridges
2304	Yangqiuting	Li	Contributed Abstracts	PER: Diversity, Equity & Inclusion	How perception of learning environment predicts students'grades and motivational characteristics
2406	Yangqiuting	Li	Poster Abstracts	Physics Education Research	How perception of learning environment predicts students' physics motivational characteristics
2788	Hong	Lin	Contributed Abstracts	PER: Assessment, Grading and Feedback	Using research-based assessment tools in intermediate physics courses
3004	Rebecca	Lindell	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Not Quite Face to Face: Conducting Qualitative Phenomenographic Interviews virtually
2763	Rebecca	Lindell	Invited Abstracts	Teaching Physics While Being Disabled	Teaching through cognitive fog: How being disabled transformed my life
2495	Matthew	Lira	Invited Abstracts	Learning from Other Disciplines	"It was never mechanically explained": Membrane potentials in physiology
3087	Dan	Liu	Contributed Abstracts	Introductory Courses	Undergraduates' understanding of vector decomposition of forces on inclined planes
2893	Frank	Lock	Contributed Abstracts	Current topics in physics for all ages	A Thermodynamics Approach to Introducing the Climate Crisis
3007	Robynne	Lock	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	An alternative to alternative physics teacher certification in Texas
3136	Savannah	Logan	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	Development and user testing of STEM teacher recruitment videos
2849	Arivaldo	Lopes	Contributed Abstracts	High School	STS approach in High School from Brazil
3059	Colin	Loxley	Contributed Abstracts	PER: Assessment, Grading and Feedback	Identifying effective practices in a Standards-Based Grading System
2655	Kristine	Lui	Contributed Abstracts	Lecture/Classroom	Comparing and Contrasting College Students At Different Institutions
2455	Amy	Lytle	Contributed Abstracts	History of Underrepresented Groups in Physics	Engaging Physics Majors in DEI Work Through a Half-credit Course
2302	Shihong	Ma	Poster Abstracts	Computer Modeling and Computation in Labs	Chromaticity Simulation Using Software Program
3043	Aidan	MacDonagh	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Remote Active Learning for Large-Enrollment Introductory Physics
2653	Alejandra	Magana	Invited Abstracts	Learning from Other Disciplines	The Role of Technology in Supporting Discipline-Based Education Research
3101	MICHAEL	MAGEE	Invited Abstracts	Forming an AAUP Chapter	Forming an AAUP Chapter at Your Institution
3034	Maggie	Mahmood	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Enabling content-specific discussions among expert-novice teacher pairs: A case study
2444	David	Maiullo	Invited Abstracts	Physics on the Road	Virtual Physics Demonstration Videos-A Primer
2356	Alysa	Malespina	Poster Abstracts	Physics Education Research	Who do students believe a growth mindset applies to?
2407	Alysa	Malespina	Poster Abstracts	Physics Education Research	Who do students believe a growth mindset applies to?
2489	Jon	Mann	Contributed Abstracts	High School	PEER Physics: Open Source Waves Unit
2939	David	Marasco	Invited Abstracts	Doing Physics and Being	Doing Physics and Being #NotYourModelMinority
2465	David	Marasco	Invited Abstracts	Physics & Astronomy SEA Change Efforts	The Origins of SEA Change
3092	Alexandru	Maries	Contributed Abstracts	Effective Practices in Educational Technology	Improving student understanding of Thermal Equilibrium with an interactive tutorial
2654	Dan	Marinzel	Contributed Abstracts	Examining student-side interactions with technology	Developing Entrepreneurial Mindset through iOLab-based Activities in Introductory Physics Courses
3139	Allison	Marsh	Invited Abstracts	Pandemics, Wars, Catastrophes: Their Impact in the History of Physics	Learning with Objects
2411	Emily	Marshman	Contributed Abstracts	Upper Division/Graduate Courses	Student difficulties with a system of identical particles
3044	Andrew	Mason	Contributed Abstracts	Upper Division Undergraduate	Rework and Recall: Exam Performance in Upper-division Electromagnetism
2445	Andrew	Mason	Invited Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	IPLS Research and Teaching at a Non-Research State University
2827	Clausell	Mathis	Poster Abstracts	Physics Education Research	Mechanistic Reasoning in the Context of Resource Oriented Instructional Materials
2387	Allison	Mattheis	Invited Abstracts	LGBT Physicists: Research and Perspectives	A Model of Queer STEM Identity
2818	Jason	May	Contributed Abstracts	Introductory Labs/Apparatus	Practices and Concepts in Physics Labs: Can We Do Both?

2793	Mikayla	Mays	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Supporting Student Construction of Alternative Lines of Reasoning
2743	Ted	Mburu	Contributed Abstracts	Examining student-side interactions with technology	Gamification of Electric Fields to Improve Students' Understanding and Engagement
2428	Kevin	McChesney	Invited Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	How it Started, How it's Going, I'm Tired
3053	Michele	McColgan	Invited Abstracts	Emergent Technologies for Remote Instruction	Developing Augmented Reality Modules to Teach Physics
2585	Melinda	McCormick	Invited Abstracts	How to talk about Sexual Harassment	How to talk about Sexual Harassment
2484	Bradley	McCoy	Contributed Abstracts	Effective Practices in Educational Technology	Swarmnotes for Live Collaborate Note-taking: Logistics and Uses
2485	Bradley	McCoy	Contributed Abstracts	Effective Practices in Educational Technology	Swarmnotes for Live Collaborate Note-taking: Student Perspectives
2438	Bradley	McCoy	Invited Abstracts	Pandemics, Wars, Catastrophes: Their Impact in the History of Physics	Most Valuable Cargo: The Tizard Mission in World War II
2739	William	McCullough	Contributed Abstracts	Introductory Labs/Apparatus	Progressing Straightforwardly by Regressing Nonlinearly
2986	Kathryn	McGill	Contributed Abstracts	Effective Practices in Educational Technology	Group project in an online world? Yes, it works!
3000	Alistair	McInerny	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Making dual nature of human reasoning more explicit during instruction*
3001	Alistair	McInerny	Poster Abstracts	Physics Education Research	The effect of dual process theory instruction on student learning*
2683	Jillian	Mellen	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Predictors of faculty sentiment on their transition to online teaching
2613	David	Meltzer	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Instructional implications of findings on students' mathematics difficulties
2864	Dawn	Meredith	Poster Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Development of dynamics questions for the Fluids Conceptual Evaluation (FCE)
2921	Christian	Merino	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Department and institution factors supporting active learning in intro courses
2928	Juan	Merlo-Ramirez	Contributed Abstracts	Teacher Training/Enhancement	Introduction to microfabrication techniques. An intensive course
3042	Troy	Messina	Poster Abstracts	Computer Modeling and Computation in Labs	Modern Physics Computation with Jupyter Notebooks
2725	Josephine	Meyer	Contributed Abstracts	Upper Division/Graduate Courses	Core Content and Difficulties Reported by Quantum Information Science Instructors
2612	Stanley	Micklavzina	Invited Abstracts	Physics on the Road	Show it to U.S.
2823	Paul	Miller	Poster Abstracts	Physics Education Research	Looking Beyond the Normalized Gain
2520	Voltaire	Mistades	Contributed Abstracts	High School	Effect of Self-Regulated Learning Worksheets on Student Understanding of Vectors
2604	Voltaire	Mistades	Poster Abstracts	Pre-college/Informal and Outreach	Development of Historical Vignettes in Teaching Physics in SHS
3037	Tasneem	Mohammed	Poster Abstracts	Physics Education Research	The impact of online college science courses on student anxiety
2434	Mary	Mohr	Invited Abstracts	Spiral Physics and Parallel Pedagogy	Spiral Physics in the Classroom
2730	Camila	Monsalve	Contributed Abstracts	PER: Diverse Investigations	Can learning physics be both joyous and uncomfortable?
2940	Martin	Monteiro	Contributed Abstracts	Lecture/Classroom	Bernoulli misunderstood and the jumping coin
3036	James	Moore	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Assumptions and the relative value of evidence in lab
2885	Ivanna	Morejon	Contributed Abstracts	PER: Interdisciplinary Studies	The Costs to Persist in Introductory Physics for Pre-Health Majors
2902	Jason	Morphew	Contributed Abstracts	Introductory Labs/Apparatus	Student Perception of Engineering Design Activities in Introductory Physics Labs
3061	Saeed	Moshfegheqaneh	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Intersection of spirituality/religiosity and physics identities for Black physics students
2973	Alexandria	Muller	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Teacher views of physics-based engineering activities
2795	Carl	Mungan	Contributed Abstracts	Introductory Courses	Modified Atwood Machine
2300	Prs	Murthy	Contributed Abstracts	Other Paper	Self energy and interaction energy in electrostatics
2333	Prs	Murthy	Contributed Abstracts	Other Paper	Self energy and interaction energy in electrostatics
2860	Prs	Murthy	Contributed Abstracts	Other Paper	Galilean transformation in electric field and magnetic field
2635	Carissa	Myers	Contributed Abstracts	PER: Diverse Investigations	Identifying Threats and Supports to Self-Efficacy Using Mixed Methods Research
2436	Amritpal	Nafria	Contributed Abstracts	Other Paper	Effect of external resistances on Newton's Second Law of motion
2882	Amritpal	Nafria	Contributed Abstracts	Other Paper	Modification of Newton's Second Law of Motion
2413	Daniel	Nagasawa	Invited Abstracts	Science Advocacy and Communicating with Elected Officials	NASEM's Committee on Planetary Protection: Advocating With and For Science
2985	Michael	Nichols	Poster Abstracts	Labs/Apparatus	Oscillations and Hooks Law For Fully Remote Introductory Physics Labs
2800	Megan	Nieberding	Contributed Abstracts	PER: Assessment, Grading and Feedback	Procrastination patterns impact on assignment submission times and grade components
2491	Jayson	Nissen	Contributed Abstracts	PER: Assessment, Grading and Feedback	Tools for Identifying Effective Courses
2492	Jayson	Nissen	Poster Abstracts	Physics Education Research	Society's Educational Debts from Racism and Sexism in Science Disciplines
2779	Dawson	Nodurft	Contributed Abstracts	Physics on the Road	Livestreamed Lessons: Experiences of Delivering a Virtual STEM Festival
3018	Margaret	Norris	Contributed Abstracts	What to Say When Students Ask About Dark Matter	Virtual tour of the Lux-Zeppelin Dark Matter Experiment
2370	Christine	O'Donnell	Contributed Abstracts	Innovations in Teaching Astronomy	Promoting Equity and Social Justice through Culturally Responsive Astronomy Education
2675	Daniel	Oleynik	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Examining Physicists' Perspectives of Career Viability and Knowledge of Impairment
2794	Matt	Olmstead	Poster Abstracts	Lecture/Classroom	Group Activities to Synthesize Physics Understanding
2912	Alexis	Olisho	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Electric charge as a signed quantity
2419	Deva	O'Neil	Invited Abstracts	Computer Modeling and Computation in Labs	Labs in Intermediate Mechanics: Combining Student-Made Videos with Computational Modeling
3058	Chris	Orban	Contributed Abstracts	Integrating Computation into High School Physics	The STEModding Object Tracker
2975	Adebanjo	Oriade	Contributed Abstracts	Informal Science in a Virtual World	Paper Choreography Framing of Learning and Teaching Physics
2965	Lindsay	Owens	Contributed Abstracts	Gender	Reflection on Underrepresented Curriculum Implementation in an Urban K-12 Setting
3054	Aaron	Paget	Contributed Abstracts	Ethics and Teaching in the Digital Age	Managing inappropriate online assistance during assessments
2868	William	Palmer	Contributed Abstracts	History of Underrepresented Groups in Physics	Hertha Ayrton (1854-1923): physicist, inventor, engineer and suffragette.
2466	Katherine	Pandora	Invited Abstracts	Pandemics, Wars, Catastrophes: Their Impact in the History of Physics	Past/Present: Does the Doomsday Clock Keep the Right Time?
2867	James	Pantaleone	Contributed Abstracts	Introductory Labs/Apparatus	Measuring the Added Mass of a Falling Coffee Filter
2545	M	Parks	Invited Abstracts	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Publishing in the American Journal of Physics
2832	Zac	Patterson	Contributed Abstracts	21st Century Physics in the Classroom	Instructional Implications of Introducing Quantum Physics in the Secondary Classroom
2995	Alanna	Pawlak	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Fostering departmental change through collaboration: an analysis of two approaches
2846	Richard	Pearson	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	GFO implementation at an aeronautical university
2758	Jonathan	Perry	Contributed Abstracts	Graduate Student Education in PER	Examining the Impact of Outreach Programs on Grads versus Undergrads
2591	Spencer	Perry	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Changes in Preservice Elementary Teachers' Attitudes Toward Computational Thinking
3020	Douglas	Petkie	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	PhysTEC at Worcester Polytechnic Institute
2764	Alli	Pfohl	Contributed Abstracts	PER: Curriculum and Instruction	The Social Negotiation of Confusion for Physics Learning
3013	Sarah	Phan-Budd	Contributed Abstracts	Teaching online/remote physics classes	Development of Online Labs for a Physics of Music Course
3019	Ciana	Pike	Contributed Abstracts	PER: Interdisciplinary Studies	Student Reflections: Exploring Physics, Ethics, and the Military-Industrial Complex
2872	Kristin	Poduska	Poster Abstracts	Technologies	Beyond email: effective communication strategies to engage students of physics
2672	Mugdha	Polimera	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Improving Teaching Methodology for an Electronics Lab Course
2826	Christopher	Porter	Contributed Abstracts	Graduate Student Education in PER	Graduate Students and Departmental Practices: Concerns During COVID-19
2829	Christopher	Porter	Contributed Abstracts	Graduate Student Education in PER	Attitudinal and Motivational Factors in Graduate Students: Correlations and Disparities
3052	William	Poteet	Contributed Abstracts	PER: Assessment, Grading and Feedback	Effectively Implementing Peer Review into the Introductory Physics Laboratory Course

3039	Nathan	Powers	Contributed Abstracts	Introducing Remote Experiments to Students	Principles of Fourier optics in a take home undergraduate laboratory
2714	Nathan	Powers	Contributed Abstracts	Introductory Labs/Apparatus	Developing leadership and teamwork in labs
2993	Nathan	Powers	Poster Abstracts	Labs/Apparatus	How agency and lab reports affected attitudes in remote labs
2563	Chanda	Prescod-Weinstein	Invited Abstracts	Teaching Physics While Being Disabled	Hiding Invisible Disabilities
2924	David	Pritchard	Contributed Abstracts	PER: Assessment, Grading and Feedback	FCI Higher Dimensions Determined by Analyzing Right and Wrong Responses
3068	Joshua	Qualls	Contributed Abstracts	Current topics in physics for all ages	Report on Pilot Study for Semiclassical Tic-Tac-Toe Online Module
3072	Joshua	Qualls	Poster Abstracts	Integrating Computation During a Pandemic	Entropy Change from Phase Transitions: Introducing Computation White Transitioning Online
2926	Gina	Quan	Contributed Abstracts	PER: Diverse Investigations	Research on Identity Development Among Physics Transfer Students
3157	Xandria	Quichocho	Invited Abstracts	Physics experiences of students from underrepresented groups	Identity Performances of Multiply Marginalized Physics Students at HSIs
2493	Xandria	Quichocho	Invited Abstracts	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Ya Basic: Examining the Duality of Minority-Serving Conference Experiences
2416	Rahmat	Rahmat	Contributed Abstracts	21st Century Physics in the Classroom	Implementing Positive Psychology in International Physics Masterclass with LHC Data
2803	Katherine	Rainey	Contributed Abstracts	Upper Division Undergraduate	A Knowledge-in-Use Assessment for Upper-Division Thermal Physics
2852	Katherine	Rainey	Poster Abstracts	Upper Division and Graduate	A Knowledge-in-Use Assessment for Upper-Division Thermal Physics
3074	Roberto	Ramos	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Student Storytelling of Physicist Profiles to Promote Physics and Diversity
3070	Roberto	Ramos	Contributed Abstracts	Virtual Outreach to Underrepresented Groups	Lessons from Student-led Virtual Physics Outreach Efforts during the Pandemic
3077	Roberto	Ramos	Poster Abstracts	Pre-college/Informal and Outreach	A Virtual Physics Camp for Middle School Girls during COVID
2979	Carina	Rebello	Contributed Abstracts	Introductory Labs/Apparatus	Martian Lander: Integrating engineering design into undergraduate introductory physics
2982	Carina	Rebello	Contributed Abstracts	Introductory Labs/Apparatus	Graduate TA Perceptions of Engineering Design in Introductory Physics Labs
3056	Carina	Rebello	Contributed Abstracts	PER: Assessment, Grading and Feedback	Using Deep Learning To Score Student Scientific Argumentation
2833	Andy	Reyna	Contributed Abstracts	Teaching online/remote physics classes	Application of Red Pitaya STEMLab to Remote Advanced Laboratory Teaching
2626	William	Rihiliuoma	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Student Conceptual Connections Within and Between Quantum Notations
2458	Uriel	Rivera	Poster Abstracts	Labs/Apparatus	Projectile motion simulation, with a low-cost interactive Arduino/S4A based apparatus
2769	Amy	Robertson	Contributed Abstracts	Teacher Training/Enhancement	Integrating energy and equity: A case study from teacher PD
2391	Amy	Robertson	Poster Abstracts	Physics Education Research	Seeing Whiteness in Introductory Physics: A Case Study
2657	Stephen	Robinson	Contributed Abstracts	Leveling up your NGSS Game	Developing NGSS-aligned assessment tasks for the Next Gen PET curriculum
2656	Stephen	Robinson	Poster Abstracts	Teacher Training/Enhancement	Affordances of a Noyce Program -STEM Center partnership
3064	Willie	Rockward	Poster Abstracts	Physics Education Research	AGEP Alliance Model for Underrepresented STEM Doctoral Candidates at HBCUs
2577	Liana	Rodelli	Contributed Abstracts	Examining student-side interactions with technology	Assessing the efficacy of technological tools to teach electric fields
2967	Miguel	Rodriguez	Contributed Abstracts	PER: Diversity, Equity & Inclusion	An Introduction to Critical Race Theory for Physicists
3023	Jeffrey	Rosauer	Contributed Abstracts	PER: Curriculum and Instruction	Effect of PhET simulations in a general education physics course
2678	Drew	Rosen	Invited Abstracts	Examining student-side interactions with technology	Building social networking and communities in remote physics laboratories
2372	Rebecca	Rosenblatt	Invited Abstracts	Science Advocacy and Communicating with Elected Officials	STEM Education and Education Research as Tools for Science Advocacy/Communication
2959	Rebecca	Rosenblatt	Poster Abstracts	Physics Education Research	Comparing NSF Funding Programs for Physics and Engineering Education
2890	Clara	Ross	Contributed Abstracts	Gender	The Leaky Pipeline in Physics Publishing
2883	Bradley	Roth	Invited Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Two-Semester Intermediate Course Sequence in Physics for the Life Sciences
2776	Bahram	Roughani	Invited Abstracts	Elements of an Integrated Curriculum	Fostering synergy among mindset and skillset
3028	David	Roundy	Contributed Abstracts	PER: Curriculum and Instruction	Introducing the new Paradigms in Physics Curriculum Website
2210	Marianna	Ruggerio	Contributed Abstracts	High School	Identity Development through Diverse Encounters
3065	Marianna	Ruggerio	Contributed Abstracts	Introductory Courses	Toward Expert Level Approaches
2804	Charles	Ruggieri	Contributed Abstracts	Effective Practices in Educational Technology	Teaching Assistants' High Impact Social Practices in Remote Physics Recitations
2759	Charles	Ruggieri	Contributed Abstracts	Examining student-side interactions with technology	Resources in Introductory Physics: Multiple Modes of Engagement and Feedback
2374	Andy	Rundquist	Invited Abstracts	The Art and Science of Teaching	The value and logistics of student-submitted videos for homework
2440	Josh	Rutberg	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Rubrics to Teach Problem-Solving Strategies in Large Enrollment Online Courses
2955	Nancy	Ruzyccki	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Developing Critical Thinking Skills through Laboratory Experiences
2588	Sangjin	Ryu	Invited Abstracts	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Using Japanese Animation (Anime) for Teaching Fluid Mechanics
2751	Mel	Sabella	Contributed Abstracts	Innovations in Teaching Astronomy	Creative Astronomy: Broadening the scope of an course in Astronomy
2802	Brianna	Santangelo	Contributed Abstracts	PER: Assessment, Grading and Feedback	Development of an Instrument to Assess Student Reasoning
2856	Vashii	Sawtelle	Contributed Abstracts	PER: Diverse Investigations	Adapting Our Research During the COVID-19 Pandemic: Reflections and Implications
2789	Erin	Scanlon	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Students' Use of Disability Accommodations in Emergency Remote Teaching
2479	Rachel	Scherr	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Toward more dyslexic-friendly physics teaching
2699	Dorothy	Schneider	Contributed Abstracts	Current topics in physics for all ages	Traditional and Digital Physics Homework in Secondary School
2984	Daniel	Schroeder	Invited Abstracts	Computation in Quantum Mechanics	Liberating undergraduate quantum mechanics through computation
2598	PETER	SCHWARTZ	Invited Abstracts	Spiral Physics and Parallel Pedagogy	Parallel Pedagogy: Seven Years, and 1000 Students Later
2691	Cindy	Schwarz	Contributed Abstracts	Introductory Courses	Video-based graphical analysis homework problems
2572	Henry	Seiden	Poster Abstracts	SPS Undergraduate Poster Session	Muon Path Detection in a Magnetic Field
2824	Juan	Serna	Contributed Abstracts	Computation in Quantum Mechanics	Dynamics of Wave Packets Propagating in Linear and Hyperbolic Potentials
2917	Lori	Shaaban	Poster Abstracts	Labs/Apparatus	Real-time 3D Object Tracking for High School and Undergraduate Physics
2784	Devvn	Shafer	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Interviews on professional development interactions between experienced and novice teachers
2376	Ivy	Shaw	Contributed Abstracts	PER: Assessment, Grading and Feedback	Sources of Response-Shift Bias in the CLASS's Real-World Connection
2884	Elien	Sijmkens	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Supporting Metacognition in Physics Problem Solving
3158	Chathuri	Silva	Poster Abstracts	Lecture/Classroom	Bringing new life to open-world physics lab experiments
2324	Chandralekha	Singh	Contributed Abstracts	PER: Curriculum and Instruction	Using clicker question sequence to teach time-development in quantum mechanics
2396	Chandralekha	Singh	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Negative Impacts on female physics majors of Cold Physics Environment
2397	Chandralekha	Singh	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Evolution in student conceptual understanding of electricity and magnetism
2307	Chandralekha	Singh	Poster Abstracts	Physics Education Research	Student understanding of quantum mechanical observables and corresponding operators
2308	Chandralekha	Singh	Poster Abstracts	Physics Education Research	Quantum Interactive Learning Tutorial on Larmor Precession of Spin
2309	Chandralekha	Singh	Poster Abstracts	Physics Education Research	Quantum Interactive Learning Tutorial on Quantum Key Distribution
2310	Chandralekha	Singh	Poster Abstracts	Physics Education Research	Just-in-Time Teaching and Peer Instruction in a Quantum Mechanics Course
2663	AMOGH	SIRNOORKAR	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	How modeling informs students' engagement in sensemaking
2610	AMOGH	SIRNOORKAR	Poster Abstracts	Physics Education Research	How modeling informs students' engagement in sensemaking
2693	Brenda	Skoczylas	Contributed Abstracts	Share-a-thon: Our Greatest Successes in a Cheeky Year	The Professor Sko Science Show YouTube Channel
3012	Anthony	Smith	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Scientific Thinking and Exploratory Discussion Posts
2945	Erin Ronayne	Sohr	Contributed Abstracts	PER: Curriculum and Instruction	Examining the dynamics of decision-making when designing curriculum in student-partnerships

2981	Erin Ronayne	Sohr	Poster Abstracts	Physics Education Research	Examining the dynamics of decision-making when designing curriculum in student-partnerships
2638	CHRISTIAN	SOIORIO	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Computation to Support Understanding of Discrete and Continuous Quantum Systems
2659	Antony	Soosaleon	Contributed Abstracts	Current topics in physics for all ages	Physics of Multi-photon Ionisation in Lower Hybrid Oscillation
2704	Gabriel	Spalding	Contributed Abstracts	Introductory Labs/Apparatus	Flux Concept Discovery Lab
2361	Samantha	Spytek	Invited Abstracts	History of Underrepresented Groups in Physics	Priming Young Scientists: Identity and Physics
2753	Bryan	Stanley	Contributed Abstracts	PER: Diverse Investigations	Identifying the key organizational components of informal physics programming
2754	Bryan	Stanley	Poster Abstracts	Pre-college/Informal and Outreach	Grad students unite! Collaborations in virtual public engagement
2642	Tim	Stelzer	Contributed Abstracts	PER: Assessment, Grading and Feedback	Practice exams impact on student exam preparation and performance
2571	John	Stewart	Contributed Abstracts	PER: Diverse Investigations	Exploring Factors Influencing the Retention of Physics Majors
2647	Dean	Stocker	Invited Abstracts	Spiral Physics and Parallel Pedagogy	Using OER materials, Perusall(R), and myOpenMath with Parallel Pedagogy
2935	Eric	Strong	Poster Abstracts	Lecture/Classroom	Real-world Problems for AP® Physics 1 and AP® Physics 2
2932	Tyler	Stump	Poster Abstracts	Physics Education Research	Analysis of Computation Based Formative Feedback within the EMP-Cubed Classroom
2452	Amber	Stuver	Invited Abstracts	Explaining Frontiers & Modern Technology	Can You Surf a Gravitational Wave?: Explaining LIGO Science
2821	Srividya	Suresh	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Evolution of Grades and Social Comparison Concern within a Course
2792	Madison	Swirtz	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Using outreach programs to retain students: a systematic literature review
2767	Muhammad	Syed	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Redesigning a first-year mechanics course for remote teaching during Covid-19
3060	Moe	Tabanli	Contributed Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Combining OER Resources with Online Simulations to Reduce Achievement Gap
3047	Anne	Tabor-Morris	Contributed Abstracts	Spiral Physics and Parallel Pedagogy	Spiraling Conservation of Energy/Mass in Introductory Physics: Kirchhoff to Bernoulli
3048	Anne	Tabor-Morris	Poster Abstracts	Lecture/Classroom	Bernoulli's Equation and Continuity Equation in terms of Energy/Mass Conservation
3067	Anne	Tabor-Morris	Poster Abstracts	Lecture/Classroom	Kirchhoff's Laws of Electricity in terms of Conservation of Energy/Mass
2722	Joineé	Taylor	Contributed Abstracts	PER: Diversity, Equity & Inclusion	How Early Physics Identity Constructs Predict Later Identity Constructs
2786	Beth	Thacker	Contributed Abstracts	PER: Assessment, Grading and Feedback	Development of an Instrument for Analysis of Student Assistants' PCK-Q
2787	Beth	Thacker	Poster Abstracts	Physics Education Research	Development of an Instrument for Analysis of Student Assistants' PCK-Q
3069	Evan	Thatcher	Contributed Abstracts	Examining student-side interactions with technology	A Free, OER, PER-based, PER-focused Curriculum for Introductory Physics
2698	Michael	Thees	Contributed Abstracts	Examining student-side interactions with technology	Augmented Reality as Assistive Tool for Electricity Lab Courses
2808	Ellie	Theobald	Invited Abstracts	Learning from Other Disciplines	Beyond linear regression: Analyzing common data types in DBER
2661	Brianna	Thomas	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Color-coding and student perceptions of learning in introductory mechanics
2998	John	Thomas	Poster Abstracts	Physics Education Research	Problem Solving as a Process of Translating Between Semiotic Modes
2876	Kristen	Thompson	Contributed Abstracts	Effective Practices in Educational Technology	Google Sites as a Platform for Student Lab Notebooks
2323	Brock	Toggerson	Invited Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Centering Units on Biologically and Chemically Authentic Contexts in IPLS-II
2533	Sachiko	Tosa	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Effectiveness of Action Research and RTOP for Improving Physics Lessons
2911	Sarah	Trallero	Poster Abstracts	Other Poster	Do Students Actually Use the Textbook?
2761	Jason	Trump	Poster Abstracts	Physics Education Research	Planetarium Use in Introductory Astronomy Courses
2639	R. Steven	Turley	Contributed Abstracts	Upper Division Undergraduate	Improving Upper Division Homework Effectiveness
2807	Mary	Urhgart	Contributed Abstracts	Integrating Computation into High School Physics	Introducing STEPP: A Resource for Physics Classrooms Utilizing Computational Thinking
2667	Mikavla	Valentin	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Exploring Student Conceptual Resources About Heat and Temperature
2643	Emily	Van Zee	Poster Abstracts	Teacher Training/Enhancement	Exploring Physical Phenomena: A Physics Course for Prospective Teachers
2607	Gladys	Velez Caicedo	Contributed Abstracts	Introducing Remote Experiments to Students	Deployment of a low-cost Muon Detector as a Remote Experiment
2404	Gautam	Vemuri	Invited Abstracts	Integrating Computation During a Pandemic	Normalizing Computations across the Physics Curriculum
3063	Eswara	Venugopal	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Integrating Science and Social Issues in the Introductory Physics Curriculum
2680	Michael	Verostek	Contributed Abstracts	PER: Diversity, Equity & Inclusion	Do admissions metrics predict PhD completion indirectly through graduate GPA?
2522	James	Vesenska	Poster Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Modeling Bite Pressure using Popcorn Kernels, a Lever, and iOLab
3009	Rebecca	Vieyra	Poster Abstracts	Technologies	Energy in Magnetic Fields: A Hands-on Activity and Preliminary Assessment
2842	Michael	Vignal	Contributed Abstracts	PER: Diverse Investigations	Asking Why Students and Instructors Draw Diagrams While Problem Solving
2841	Michael	Vignal	Invited Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Students' Differential Experiences with Emergency Remote Teaching in Fall 2020
2535	Matthew	Vonk	Contributed Abstracts	Effective Practices in Educational Technology	Customizing student experiences by pushing randomized values to simulations
2847	Shannon	Wachowski	Contributed Abstracts	Teacher Training/Enhancement	#Leadershipgoals
2558	Cathy	Wagner	Contributed Abstracts	Forming an AAUP Chapter	Supporting Faculty During the Pandemic and Beyond
3080	Doris	Wagner	Poster Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Development of statics questions for the Fluids Conceptual Evaluation (FCE)
2896	Isaac	Waldstein	Contributed Abstracts	Physics Majors: High School to Doctorate	Making general relativity more accessible: the generalized geodesic deviation equation
2861	Paul	Walter	Contributed Abstracts	PER: Interdisciplinary Studies	An approach for comparing student populations using item response curves
2578	Tong	Wan	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Evaluating student ability to draw conclusions from measurement data
2929	Jay	Wang	Contributed Abstracts	Computation in Quantum Mechanics	Multimodal computation in quantum mechanics
2931	Jay	Wang	Contributed Abstracts	Integrating Computation into High School Physics	Vertical integration of computation into the physics curriculum
2596	Jianlan	Wang	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Measure student assistants' PCK-Q in online settings during COVID pandemic
2970	David	Waters	Contributed Abstracts	Introductory Courses	Chlorophyll fluoresces red!
3011	David	Waters	Poster Abstracts	Physics Education Research	Measuring students' level of understanding in introductory physics courses
3008	David	Waters	Poster Abstracts	Teaching the Introductory Physics for the Life Sciences (IPLS) course	The absorption spectrum of organic molecules
2690	Alyssa	Waterson	Contributed Abstracts	PER: Diverse Investigations	Investigating Impact of Transfer Credits on Time-to-Degree using Regression Models
2869	Thomas	Weatherby	Poster Abstracts	Lecture/Classroom	Material Development for Teaching Electric Circuits with the Pressure Analogy
2953	Jannis	Weber	Poster Abstracts	Computer Modeling and Computation in Labs	Improving Students' Conceptions Combining Computational Modeling and Real-world Data
2752	Weston	Wegleitner	Contributed Abstracts	PER: Assessment, Grading and Feedback	Using Ranking Question to Assess Student Assistants' PCK-Q
2756	Weston	Wegleitner	Poster Abstracts	Physics Education Research	Using Ranking Questions to Assess Student Assistants' PCK-Q
3030	Nandana	Weliveriya Liyanage	Poster Abstracts	Physics Education Research	Personas of Student completing Online Instructions During the COVID-19 Pandemic
3031	Nandana	Weliveriya Liyanage	Poster Abstracts	Physics Education Research	Student Feedback: Transition to Online Instructions During the COVID-19 Pandemic
3032	Nandana	Weliveriya Liyanage	Poster Abstracts	Physics Education Research	Students' Problem-Solving Processes Associated with Representations in Pencasts.
3035	Nandana	Weliveriya Liyanage	Poster Abstracts	Physics Education Research	Social Semiotic Resources to Investigate STEM Problem Solving with Representations.
2389	Christopher	Wheatley	Contributed Abstracts	PER: Diverse Investigations	Multilevel Module Analysis of the FCI
2383	Christopher	Wheatley	Poster Abstracts	Physics Education Research	Network Analysis of the CLASS
2712	Gary	White	Invited Abstracts	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	TPT Highlights from a Challenging Year
2878	Craig	Wiegert	Contributed Abstracts	PER: Diverse Investigations	Communication Apprehension and Learning Profiles in Introductory Physics
3046	Craig	Wiegert	Poster Abstracts	Astronomy Poster	Student Understanding of Eclipses: Then and Now
2386	Jeffrey	Williams	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	Video Solution to GFO for Asynchronous Community Colleges Courses

2898	Karen	Williams	Contributed Abstracts	History of Underrepresented Groups in Physics	Hispanics in Physics for Today's Students
2886	Stephanie	Williams	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Modeling Disrupting Disenfranchising Narratives about Students in Faculty Conversations
2448	Nehemiah	Williams	Invited Abstracts	Back to the Moon, and off to Mars	Physical and Technical Challenges for Human Missions to Mars
2560	Julia	Willison	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Teacher use of resources while integrating computational modeling into classrooms
2488	Shannon	Willoughby	Poster Abstracts	Upper Division and Graduate	Improving the Communication Skills of STEM Graduate Students
2871	Monika	Wood	Contributed Abstracts	Teaching online/remote physics classes	Demonstrating Physics in the Remote Landscape
2462	Laura	Wood	Contributed Abstracts	Two Year Colleges	Narrative Analysis of Two-Year College Transfer Student's Experiences
2463	Laura	Wood	Poster Abstracts	Physics Education Research	Observing and Characterizing a Two-Year College Research Methods Course
2652	Andrea	Wooley	Poster Abstracts	Physics Education Research	Embracing Subjectivity in Physics to Support Student Empowerment
2790	Xian	Wu	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change	Improving group work in studio-style physics courses
2557	Jun-ichiro	Yasuda	Contributed Abstracts	PER: Assessment, Grading and Feedback	Optimizing the length of computerized adaptive testing for the FCI
2773	Jingbo	Ye	Contributed Abstracts	Introductory Labs/Apparatus	An Apparatus for the Lab of Uniform Circular Motion
2901	Hank	Yochum	Contributed Abstracts	Informal Science in a Virtual World	Informal science for high school students over video conference
2365	Diedre	Young	Contributed Abstracts	High School	Teaching physics using agricultural concepts.
2908	Tamara	Young	Contributed Abstracts	Leveling up your NGSS Game	Energy Transformations with Utah FORGE: Keys to Sustainable Energy Solutions
2798	Dan	Young	Invited Abstracts	Emergent Technologies for Remote Instruction	Using Gradescope to Administer Laboratory Exercises Remotely
2349	Chadwick	Young	Poster Abstracts	Physics Education Research	The Write Stuff: Does Writing on Exams Correlate with Success?
2296	Diedre	Young	Poster Abstracts	Pre-college/Informal and Outreach	Teaching physics using agricultural concepts.
2481	Richard	Zajac	Contributed Abstracts	Introductory Courses	Equipotentials-matching challenge: an alternative to the classic plotting lab
2385	Shawn	Zaleski	Contributed Abstracts	Introducing Remote Experiments to Students	A Modern Remotely Operable Arduino Approach for Advanced Physics Laboratory
2838	Liang	Zeng	Poster Abstracts	Other Poster	Two Content Pathways in Presenting Electromagnetism in Introductory Physics Textbooks
2737	Tom	Zhang	Contributed Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Demographic Gaps in Achievement Caused By COVID-induced Campus Closure
2770	Muxin	Zhang	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Navigating Conceptual Uncertainties and Socio-Emotional Risks in Small-Group Work
2905	XIANNQUN	ZHANG	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	The conceptual development of student understanding of weight
2586	Yun	Zhang	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Implementing Authentic Online Assessments in Large Enrollment Introductory Courses
2937	Xiaohong	Zhao	Contributed Abstracts	Other Paper	Analysis and simulation of the non-circular fringe in Michelson interference
2716	Raymond	Zich	Contributed Abstracts	PER: Curriculum and Instruction	Incorporating computational activities in a general education astronomy course
3076	Charlotte	Zimmerman	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning	Data linearization as a tool for developing covariational reasoning
2735	Dina	Zohrabi Alaae	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Impact of virtual REU experiences on sense-of-belonging and identity.
2403	Muhammad	Zubairy	Invited Abstracts	Explaining Frontiers & Modern Technology	Teaching quantum mechanics and quantum information to high school students
2706	Daniel	Zuckerman	Invited Abstracts	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Key biology you should have learned in physics class
2978	Ethan	Zuo	Poster Abstracts	Computer Modeling and Computation in Labs	Optimization of Two-phase Jet Impingement Cooling for High Power-Density Processors
2783	Benjamin	Zwickl	Invited Abstracts	Elements of an Integrated Curriculum	Integrating computation, experimentation, projects, and human-centered applications in lab courses